IN THE SPECIFICATION

Please amend the following paragraphs as indicated below.

[0029] The Current Detector 103, which receives its power from power supply 109, is coupled to send a signal to the Voltage Controller 110. Once the Current Detector 103 detects change in the current at the microprocessor 100, it signals the Voltage Controller 110 to boost the voltage for a limited amount of time as represented in Figure 6. The Voltage Controller 110 relays the voltage boost to the microprocessor through the power distribution bus (e.g. the microprocessor's voltage planes). This boost in voltage serves to compensate for any voltage droop that may occur due to the sudden demand for power at the microprocessor and as such enable the microprocessor to handle its compute load without experiencing a lower maximum operating frequency.

[0030] Figure 9 shows a more detailed representation of a voltage controller of the invention such as the Voltage Controller 110. The Current Detector 902 in Figure 9 ~~902~~ that is coupled to the microprocessor 901 is also coupled to send a signal to an Adjustable Reference Voltage device 903. The Adjustable Reference Voltage 903 functions as a translator, which translates current levels to reference voltage levels. Once the Current Detector 902 detects the current level at the microprocessor it relays that information to the Adjustable Reference Voltage 903. In turn, the Adjustable Reference Voltage 903 determines the appropriate voltage level that must be provided by the Voltage Controller 900 according to the current level detected and as such the Voltage Controller boosts the voltage to the appropriate level through the differential amplifier of Figure 9. The current to voltage relationship, of one embodiment, is exemplified in Figure 5. It will be appreciated that the variable resistor, shown coupled to

the output of the differential amplifier, may be implemented as multiple variable controlled resistors in parallel. An alternative of the controller of Figure 9 may use a switched capacitor to switch in an additional voltage source for a period of time. In this alternative, Vin may be an auxiliary voltage on an auxiliary capacitor. When it is desired to add a voltage boost (Vboost) to mitigate voltage droop effects, the capacitor is switched into the output of the controller, and the charge on the capacitor would quickly move the Vout node, raising the voltage. The amount of the boost would be set by the ratio of the capacitance on Vout, the capacitor and the voltage difference prior to coupling/switching the capacitor onto Vout.

[0034] The change from a low power supply voltage to a higher supply voltage may include the additional boost voltage (for a period of time) to mitigate the voltage droop effect. An example of this embodiment, with changes to states in the system, will now be provided while referring to Figure 12. While operating a processing system (e.g. a microprocessor) at a first frequency, a determination is made in operation 1201 of Figure 12, to change to a faster frequency (a "second" frequency). Prior to changing the operating frequency, the power supply voltage is raised in operation 1203 (from V to V'). An optional operation (1205) may then follow in which V' is increased to V' + Vboost for a period of time; this is similar to operation 713 of Figure 7. This additional voltage boost is designed to mitigate the effects of voltage droop. Following operation 1205, the operating frequency is increased to a second frequency in operation 1207. Then, in operation 1209, the power supply voltage is reduced back to V' and the system continues to operate at the second operating frequency. In operation 1211, a determination is made to reduce the operating frequency (e.g. the system automatically decides to enter a reduced power consumption state or the user selects such a state). As a result, in

operation 1213, the operating frequency of the system is lowered to the first frequency (or to another frequency which is lower than the second frequency). After operation ~~1213~~ 1215, the power supply voltage is lowered from V' to V (or to a voltage appropriate to the corresponding new operating frequency).